



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,980	06/24/2003	Shunpei Yamazaki	0553-0369	2058

7590 07/13/2005

COOK, ALEX, McFARRON, MANZO,  
CUMMINGS & MEHLER, LTD.  
SUITE 2850  
200 WEST ADAMS STREET  
CHICAGO, IL 60606

EXAMINER

PERRY, ANTHONY T

ART UNIT	PAPER NUMBER
----------	--------------

2879

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

42

## Office Action Summary

Application No.

10/602,980

Applicant(s)

YAMAZAKI ET AL.

Examiner

Anthony T. Perry

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 16-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/24, 9/15, 2/16, 3/7.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election without traverse of claims 1-15 in the reply filed on 4/26/05 is acknowledged.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hamada (US 6,114,715).

Regarding claims 1 and 10, Hamada teaches a light-emitting device comprising an anode as the first electrode (103) connected to a thin film transistor (43) over a substrate (102) having an insulating surface; a partition wall (54 + 2) covering an edge of the first electrode (103); a layer comprising an organic compound (104-107) in contact with the first electrode (103); and a cathode as the second electrode (108) in contact with the layer comprising an organic compound, wherein the partition wall comprises a laminate of an organic resin layer (54) and a light-absorbing layer (2) (see Fig. 8). Hamada teaches that the light-absorbing layer (2) in Fig. 8 may be replaced by the multilayer film (24) which inherently absorbs light (see col. 9, lines 48-51).

Regarding claim 2, the partition wall (54 + 2) covers other regions than a light emitting region in which the first electrode (103) and the organic compound-containing layer (104-107) are in contact with each other and laid on top of each other (see Fig. 8).

Regarding claims 3 and 5, Hamada teaches the multilayer film including a layer that comprises silicon oxide (see col. 7, lines 9-11).

Art Unit: 2879

Regarding claim 12, Hamada teaches the organic compound being a material emitting blue light (see col. lines 23-32).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 11, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US 6,114,715).

Regarding claims 8 and 11, Hamada only shows a bottom-emitting type EL device, and as such does not specifically teach the first electrode being a light transmissive cathode. However, it is well known in the art that organic EL displays can be of the top-emitting type or bottom-emitting type, simply by reversing the order of the cathode, organic EL layer, and anode. In a top-emitting type EL device the cathode is formed of a conductive light transmissive material. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first electrode be a light transmissive cathode where a top-emitting device is desired.

Regarding claims 13-14, Hamada does not specifically teach the organic EL layer being a white light-emitting material used with a color filter or being a material emitting monochromatic light used with a color conversion layer. However, it is well known in the art that there are three different methods of making an organic EL display a full-color display including: (1) the three color light-emitting method, as taught by Hamada, where three different types of organic

Art Unit: 2879

EL material are used that emit lights corresponding to the three primary colors; (2) a white color method in which white light emitted by an organic EL element for emitting white light is passed through a color filter so as to be divided into the three primary colors; and (3) a color conversion method in which a monochromatic light emitting EL element emitting blue light is passed through a fluorescent dye layer and converted into red and green. The color conversion layers and color filters are located in a sealing member to protect them from outside elements. Each of the methods have different known advantages. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the types to form a full-color organic EL display.

Regarding claim 15, Hamada teaches that the organic EL display device provides high-definition images. Hamada does not specifically state that the EL device is used in one of the claimed devices. However, the use of color organic EL devices in such display devices as claimed is well known in the art. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the organic EL display device taught by Hamada in one of the claimed devices because of its ability to provide high-definition images.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US 6,114,715) as applied to claim 1, above, in view of Oda et al. (US 6,396,208).

Regarding claim 9, Hamada does not specifically teach the first electrode having a concave shape. However, Oda teaches the first electrode having a concave shape so as to utilize the reflection of concave electrode for improving light-collection efficiency (for example, see the abstract).

Claims 1-2, 4-5, 8, 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US 6,114,715) in view of Iwase et al. (US 6,768,534).

Regarding claims 1, 4-5, and 10, Hamada teaches a light-emitting device comprising an anode as the first electrode (103) connected to a thin film transistor (43) over a substrate (102) having an insulating surface; a partition wall (54 + 2) covering an edge of the first electrode (103); a layer comprising an organic compound (104-107) in contact with the first electrode (103); and a cathode as the second electrode (108) in contact with the layer comprising an organic compound, wherein the partition wall comprises a laminate of an organic resin layer (54) and a light-absorbing layer (2) (see Fig. 8). Hamada does not specifically teach the light-absorbing layer (black matrix layer) comprising multiple layers.

However, Iwase et al. teaches two different types of black matrix films. One comprised of a single layer and one comprising multiple layers. Iwase teaches that the multilayer film has a predetermined reflected light attenuating structure and comprises a chromium metallic layer and a light transmissive insulating layer comprising nitride. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made to reasonably contemplate the use of such a black matrix multilayer film since Iwase teaches that it has a predetermined reflected light attenuating structure and that it is a known alternative to a single layer black matrix film.

Regarding claim 2, the partition wall (54 + 2) covers other regions than a light emitting region in which the first electrode (103) and the organic compound-containing layer (104-107) are in contact with each other and laid on top of each other (see Fig. 8).

Regarding claim 12, Hamada teaches the organic compound being a material emitting blue light (see col. lines 23-32).

Art Unit: 2879

Regarding claims 8 and 11, Hamada only shows a bottom-emitting type EL device, and as such does not specifically teach the first electrode being a light transmissive cathode.

However, it is well known in the art that organic EL displays can be of the top-emitting type or bottom-emitting type, simply by reversing the order of the cathode, organic EL layer, and anode. In a top-emitting type EL device the cathode is formed of a conductive light transmissive material. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first electrode be a light transmissive cathode where a top-emitting device is desired.

Regarding claims 13-14, Hamada does not specifically teach the organic EL layer being a white light-emitting material used with a color filter or being a material emitting monochromatic light used with a color conversion layer. However, it is well known in the art that there are three different methods of making an organic EL display a full-color display including: (1) the three color light-emitting method, as taught by Hamada, where three different types of organic EL material are used that emit lights corresponding to the three primary colors; (2) a white color method in which white light emitted by an organic EL element for emitting white light is passed through a color filter so as to be divided into the three primary colors; and (3) a color conversion method in which a monochromatic light emitting EL element emitting blue light is passed through a fluorescent dye layer and converted into red and green. The color conversion layers and color filters are located in a sealing member to protect them from outside elements. Each of the methods have different known advantages. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the types to form a full-color organic EL display.

Regarding claim 15, Hamada teaches that the organic EL display device provides high-definition images. Hamada does not specifically state that the EL device is used in one of the claimed devices. However, the use of color organic EL devices in such display devices as claimed is well known in the art. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the organic EL display device taught by Hamada in one of the claimed devices because of its ability to provide high-definition images.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US 6,114,715) in view of Iwase et al. (US 6,768,534) as applied to claim 1, above, in view of Oda et al. (US 6,396,208).

Regarding claim 9, Hamada does not specifically teach the first electrode having a concave shape. However, Oda teaches the first electrode having a concave shape so as to utilize the reflection of concave electrode for improving light-collection efficiency (for example, see the abstract).

Claims 1-8 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US 6,114,715) in view of Kaneda et al. (JP 2000-269473).

Regarding claims 1, 3-5, and 10, Hamada teaches a light-emitting device comprising an anode as the first electrode (103) connected to a thin film transistor (43) over a substrate (102) having an insulating surface; a partition wall (54 + 2) covering an edge of the first electrode (103); a layer comprising an organic compound (104-107) in contact with the first electrode (103); and a cathode as the second electrode (108) in contact with the layer comprising an



Art Unit: 2879

organic compound, wherein the partition wall comprises a laminate of an organic resin layer (54) and a light-absorbing layer (2) (see Fig. 8). Hamada does not specifically teach the light-absorbing layer (2) (black matrix layer) comprising multiple layers.

However, Kaneda et al. teaches a multilayer light-absorbing film comprising a SiO<sub>2</sub> layer (56), a titanium nitride layer (53), an aluminum metal layer (55), and another SiO<sub>2</sub> layer (56) (see Fig. 1 and paragraphs 0012-0013) that provides an improved light-absorbing layer that absorbs 90% or more of reflected ambient light, protecting the transistors from degradation and eventual malfunction. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made to use such a superior light-absorbing multilayer film in place of the single layer film disclosed in the Hamada reference in order to increase the amount of ambient light absorbed providing improved TFT protection.

Regarding claim 2, the partition wall (54 + 2) covers other regions than a light emitting region in which the first electrode (103) and the organic compound-containing layer (104-107) are in contact with each other and laid on top of each other (see Fig. 8).

Regarding claims 6-7, Kaneda teaches the SiO<sub>2</sub> layers (56 and 54) being replaced with silicon nitride in order to increase the light absorption even further (to about 99%) (see for example paragraph 0016).

Regarding claim 12, Hamada teaches the organic compound being a material emitting blue light (see col. lines 23-32).

Regarding claims 8 and 11, Hamada only shows a bottom-emitting type EL device, and as such does not specifically teach the first electrode being a light transmissive cathode. However, it is well known in the art that organic EL displays can be of the top-emitting type or bottom-emitting type, simply by reversing the order of the cathode, organic EL layer, and anode.

Art Unit: 2879

In a top-emitting type EL device the cathode is formed of a conductive light transmissive material. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first electrode be a light transmissive cathode where a top-emitting device is desired.

Regarding claims 13-14, Hamada and Kaneda do not specifically teach the organic EL layer being a white light-emitting material used with a color filter or being a material emitting monochromatic light used with a color conversion layer. However, it is well known in the art that there are three different methods of making an organic EL display a full-color display including: (1) the three color light-emitting method, as taught by Hamada, where three different types of organic EL material are used that emit lights corresponding to the three primary colors; (2) a white color method in which white light emitted by an organic EL element for emitting white light is passed through a color filter so as to be divided into the three primary colors; and (3) a color conversion method in which a monochromatic light emitting EL element emitting blue light is passed through a fluorescent dye layer and converted into red and green. The color conversion layers and color filters are located in a sealing member to protect them from outside elements. Each of the methods have different known advantages. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the types to form a full-color organic EL display.

Regarding claim 15, Hamada teaches that the organic EL display device provides high-definition images. Hamada does not specifically state that the EL device is used in one of the claimed devices. However, the use of color organic EL devices in such display devices as claimed is well known in the art. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the organic EL display device

Art Unit: 2879

taught by Hamada in one of the claimed devices because of its ability to provide high-definition images.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada (US 6,114,715) in view of Kaneda et al. (JP 2000-269473) as applied to claim 1, above, in view of Oda et al. (US 6,396,208).

Regarding claim 9, Hamada and Kaneda do not specifically teach the first electrode having a concave shape. However, Oda teaches the first electrode having a concave shape so as to utilize the reflection of concave electrode for improving light-collection efficiency (for example, see the abstract).

#### ***Other Prior Art Cited***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sotoyama et al. (US 6,805,977) provides evidence that the three different methods of making full-color organic EL displays is well known in the art.

Silvernail et al. (US 6,597,111) provides evidence that top-emitting and bottom-emitting displays are well known in the art and that organic EL display devices can be switched between one or the other simply by rearranging the orders of the cathode, EL layer, and the anode.


#### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is (571) 272-2459. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

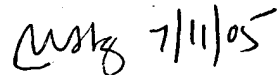
Art Unit: 2879

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-24597. **The fax phone number for this Group is (703) 872-9306.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Anthony Perry  
Patent Examiner  
Art Unit 2879  
July 11, 2005



Mariceli Santiago  
Primary Examiner  
Art Unit 2879